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1 CLAIMS

2 What is claimed is:

3 Claim 1. (original) A method for representing interconnection of a plurality of elements on a
4 network, the method comprising:

5 providing a first catalog for a first subset of said elements, and providing a second catalog for a
6 second subset of said elements;

7 creating a matrix of connection cells formed by an intersection of a pair of elements, wherein a
8 first element of each pair is taken from the first catalog and a second element of each pair is
9 taken from the second catalog; and

10

11 forming a connection representation for at least a subset of the pairs.

12 Claim 2. (original) A method as recited in claim 1, wherein at least one element is a catalog of
13 sub-elements, and the method further comprises the step of including all sub-elements in the
14 matrix.

15 Claim 3. (original) A method as recited in claim 1, wherein the network is a communications
16 network and at least a subset of the elements includes routers.

17 Claim 4. (original) A method as recited in claim 1, wherein the network is an IP network and at
18 least a subset of said elements have an IP protocol stack.

19 Claim 5. (original) A method as recited in claim 1, wherein at least one particular element in the
20 first catalog is the same as a particular element in the second catalog.

21 Claim 6. (original) A method as recited in claim 1, wherein at least one of the catalogs includes a
22 plurality of sub-catalogs.

23 Claim 7. (original) A method as recited in claim 1, wherein at least a portion of the network is a
24 computer network.

25 Claim 8. (original) A method as recited in claim 1, wherein at least a portion of the network is a
26 virtual network.

27 Claim 9. (original) A method as recited in claim 1, wherein at least a portion of the network is a
28 network implemented using a layer above a physical layer.

29 Claim 10. (original) A method as recited in claim 1, wherein at least a portion of the network is
30 an overlay network.

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- 1 Claim 11. (original) A method as recited in claim 10, wherein at least a portion of the overlay
2 network is an IPsec network.
- 3 Claim 12. (original) A method as recited in claim 10, wherein at least a portion of the overlay
4 network provides Quality of Service.
- 5 Claim 13. (original) A method as recited in claim 10, wherein at least a portion of the overlay
6 network is an MPLS network.
- 7 Claim 14 A method as recited in claim 1, wherein the network includes VLANs.
- 8 Claim 15. (original) A method as recited in claim 1, further comprising the step of configuring at
9 least a portion of the network employing the representation.
- 10 Claim 16. (original) A method as recited in claim 1, wherein at least a portion of one catalog is
11 formed using combinatorial operations upon elements of other catalogs.
- 12 Claim 17. (original) A method as recited in claim 1, further comprising associating at least one
13 task with at least one connection.
- 14 Claim 18. (original) A method as recited in claim 17, further comprising triggering at least said
15 one task as a result of a change of a state of said one connection.
- 16 Claim 19. (original) A method as recited in claim 1, wherein at least one of the elements is an
17 abstract entity.
- 18 Claim 20. (original) A method as recited in claim 19, wherein an element embodies the
19 attributes of Quality of Service.
- 20 Claim 21. (original) A method as recited in claim 19, wherein an element embodies the
21 attributes of security.
- 22 Claim 22. (original) A method as recited in claim 1, wherein at least one of the elements is a
23 physical entity.
- 24 Claim 23. (original) A method as recited in claim 1, further comprising displaying at least one
25 portion of the matrix.
- 26 Claim 24. (original) A method as recited in claim 1, further comprising monitoring at least one
27 portion of the matrix.
- 28 Claim 25. (original) A method of claim 1, wherein the matrix is structured such that elements of
29 a row are different from elements of a column.

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- 1 Claim 26. (original) A method of claim 25, wherein at a least a portion of the connections form a
2 star network.
- 3 Claim 27. (original) A method of claim 1, wherein the matrix is structured such that elements on
4 a the row are identical to elements on a column.
- 5 Claim 28. (original) A method of claim 27, wherein at a least a portion of the connections form a
6 mesh network.
- 7 Claim 29. (original) A method as recited in claim 2, wherein at least another element is a second
8 catalog of sub-elements and the method further comprises the step of forming a sub-matrix of
9 said one element with said another element.
- 10 Claim 36. (original) A method as recited in claim 1, further comprising employing a wizard to
11 form at least a subset of the elements.
- 12 Claim 31. (original) A method as recited in claim 1, further comprising
13 initializing all connections to a connected state.
- 14 Claim 32. (original) A method as recited in claim 1, further comprising employing a wizard to
15 determine which connections to be brought to a connected state.
- 16 Claim 33. (original) A method as recited in claim 1, further comprising
17 initializing all connections to a non-connected state.
- 18 Claim 34. (original) A method as recited in claim 1, further comprising choosing at least one pair
19 upon which a manipulation is performed.
- 20 Claim 35. (original) A method as recited in claim 34, further comprising modifying at least one
21 changeable attribute of the connection.
- 22 Claim 36. (original) A method as recited in claim 35, further comprising causing an inheritable
23 change to be inherited by a group of inheritors.
- 24 Claim 37. (original) A method as recited in claim 36, wherein a first element is a first gateway, a
25 second element is a second gateway, and the attribute is setting a security policy, and the step of
26 causing causes the security policy to be set at all elements included in the first and second
27 gateway.
- 28 Claim 38. (original) A method as recited in claim 36, wherein a first element is a catalog of
29 sub-elements, and the attribute is setting a Quality of Service policy, and the step of causing
30 causes the Quality of Service policy to be set at all sub-elements of the first element.
- 31 Claim 39. (original) A method as recited in claim 6, wherein a sub-catalog includes other
32 sub-catalogs.

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1 Claim 40. (original) A method as recited in claim 1, further comprising monitoring at least a
2 portion of a network state in accordance with the representation.

3 Claim 41. (original) A method as recited in claim 40, further comprising displaying at least a
4 portion of the network state.

5 Claim 42. (original) A method as recited in claim 41, wherein the step of displaying includes
6 employing color codes for showing attributes.

7 Claim 43. (original) A method as recited in claim 1, further comprising the step of modeling
8 connections.

9 Claim 44. (original) A method as recited in claim 41, further comprising indicating changes in
10 performance in response to an occurrence.

11 Claim 45. (original) A method as recited in claim 1, wherein a least one element of a particular
12 pair is a sub-catalog, the method further comprising expanding elements of the pair into a
13 sub-matrix.

14 Claim 46 to Claim 87. (withdrawn).

15 ⁹¹ 88. (new) A method for representing on a display a connection representation, the method
16 comprising:
17 forming at least one catalog of data elements;

18 creating a matrix of catalog elements for the data elements of at least one of said at least one data
19 catalog;

20 forming a connection representation between pairs of elements in each said at least one data
21 catalog;

22 instantiating connections in the connection representation; and

23 employing the matrix in a network action.

24 ⁹² 89. (new) A method as recited in claim 88, wherein the network action includes an action taken
25 from a group of actions including monitoring, problem determination, tuning and modeling.

26 ⁹³ 90. (new) A method as recited in claim 88, wherein at least one catalog of is a catalog of
27 elements considered for interconnection by themselves.

28 ⁹⁴ 91. (new) A method as recited in claim 88, further comprising manipulating catalog elements to
29 create at least one new catalog from a union of existing catalogs.

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- 1 92. (new) A method as recited in claim 88, further comprising employing an operation taken
2 from a group of operations consisting of: typing, ordering, adding, moving and deleting to and
3 from one or more catalogs.
- 4 93. (new) A method as recited in claim 92, wherein the operation of typing is a catalog class
5 taken from a group of classes consisting of: Endpoint catalog; Tunnel catalog; Encryption
6 methods catalog; Validity catalog; Action catalog; and Traffic Loading catalog.
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